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NOTES ON SOME STOMATOPOD CRUSTACEANS FROM PERÚ

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In 1910, M. J. Rathbun recorded three species of stomatopods from Peruvian waters: *Cloridopsis dubia* (H. Milne-Edwards), *Pseudosquillopsis lessonii* (Guérin), and *Nannosquilla decemspinosa* (Rathbun). The same three species were reported by Schmitt (1940) in a detailed review of the Eastern Pacific stomatopods. More recently, marine investigations in Peruvian waters have shown that several other species also occur there. Two new species have been described from specimens taken off Perú (Manning, 1970) and additional records have been given by several authors (Del Solar, 1968, 1970; Del Solar and Alamo, 1970; Del Solar et al., 1970; Fonseca, 1970; and Del Solar and Mistakidis, 1971). In all, 13 species have been recorded from Perú.

Two other species are recorded below, one representing a new genus and species, based on material collected by Dr. Enrique M. Del Solar. In addition, the first postlarva of *Hemisquilla ensigera* is reported. I am indebted to Dr. Del Solar for making this material available for study.

I take this opportunity to correct the name of a species which I named in 1970 in honor of Dr. Del Solar, *Eurysquilla solari*. As Dr. Del Solar pointed out to me (in litt.), the specific name should be *delsolari* [EMENDATION].

Terms and measurements used in the descriptive accounts have been explained in detail in an earlier paper (Manning, 1969a). All of the material has been deposited in the Division of Crustacea, National Museum of Natural History, Smith-

sonian Institution (USNM). The illustrations are by my wife Lilly.

Hemisquilla ensigera ensigera (Owen, 1832)

Figure 1

Hemisquilla stylifera.—Schmitt, 1940, p. 182, figure 18a [other references].

Hemisquilla ensigera.—Manning, 1963a, p. 315.

Hemisquilla ensigera ensigera.—Stephenson, 1967, p. 16.—Del Solar et al., 1970, p. 36.—Fonseca, 1970, p. 79.—Del Solar, 1970, p. 47.

Hemisquilla ensiger.—Fonseca, 1970, p. 79, figure 193.

Material: 1 ♀ postlarva, TL 29.5 mm; Mancora Bank, Perú; 140 meters; trawl; 11 January 1971; E. M. Del Solar; USNM 139516.

Diagnosis: Cornea bilobed, smaller secondary lobe visible in dorsal view. Antennular peduncle ⅔ carapace length. Antennal scale ovate, more than half as long as carapace. Rostral plate triangular, length and width subequal, apex rounded. Carapace unarmed, lacking carinae; gastric grooves and lateral portions of cervical groove visible. Mandibular palp and 5 epipods present. Dactylus of raptorial claw slender, unarmed, external margin with strong proximal notch; superior margin of propodus tuberculate proximally, with 2 proximal spinules. Lateral processes of sixth and seventh thoracic somites rounded. Abdominal somites unarmed, not carinate dorsally; sixth somite with ventrolateral spine anterior to articulation of uropod. Telson with 3 longitudinal ridges on dorsal surface, median terminating in a blunt lobe, and 3 pairs of marginal teeth, submedians widely separate, with movable apices; denticles: 27 submedian, 2 intermediate (inner on rounded lobe), 1 lateral. Basal segment of uropod unarmed; proximal segment of exopod with 5 movable spines, distalmost extending about to midlength of distal segment; basal prolongation of uropod with stronger inner spine and broad, rounded lobe between spines.

Color: Completely faded.

Measurements: Only specimen examined, female postlarva, total length 29.5 mm; other measurements, in mm: carapace length ca 5.6; eye length 1.9; rostral plate length 2.8, width 2.7; fifth abdominal somite width 6.2; telson length 3.8, width 6.1.

Remarks: The postlarva of *H. e. ensigera* resembles adults in basic facies, but differs in having a bilobed eye, a more conspicuous lobe on the dactylus of the raptorial claw, lower dorsal carinae and numerous submedian denticles on the telson, a more prominent outer spine on the basal prolongation of the uropod, and in lacking a median keel on the eighth thoracic somite and longitudinal carinae on the sixth abdominal somite. In spite of these differences, the postlarva is clearly identifiable as that of a *Hemisquilla*.

There are numerous differences between the postlarva of *Hemisquilla*

FIG. 1. *Hemisquilla ensigera ensigera* (Owen), female postlarva, TL 29.5 mm: *a*, anterior portion of body; *b*, eye, enlarged; *c*, raptorial claw; *d*, sixth abdominal somite, telson, and uropod; *e*, submedian margin of telson, enlarged; *f*, uropod, ventral view. (Setae omitted.)

and that of species in other genera in the Gonodactylidae such as *Parasquilla*, *Pseudosquilla*, and *Pseudosquillopsis*; as adults, representatives of these other genera also are large gonodactylids, although none attains the size of *Hemisquilla*, and as adults all have three teeth on the dactylus of the raptorial claw (Manning, 1963b). The postlarva of *Hemisquilla* differs from those of *Parasquilla* and *Pseudosquillopsis* in lacking teeth on the claw and in having only two spines rather than three on the basal prolongation of the uropod; the bilobed eyes of the postlarva of *Hemisquilla* are very different from the trilobed eyes found in representatives of the other two genera (Manning, 1969b). The postlarva of *Hemisquilla* differs from that of *Pseudosquilla* (see Bigelow, 1931) in that the shape of the rostral plate is triangular rather than cordiform or oval, there are no spines on the abdominal somites, and there is a large lobe

between the spines of the basal prolongation of the uropod; the postlarvae of both of these genera lack teeth on the dactylus of the raptorial claw, although teeth are added subsequently in species of *Pseudosquilla*. The postlarvae of all four of these genera are of similar size, with a total length of less than 35 mm; the postlarvae of *Pseudosquilla ciliata* are usually under 24 mm in length and are smaller than those known for other species of *Pseudosquilla* as well as representatives of the other genera.

Schmittius new genus

Definition: Eye large, cornea bilobed, wider than and set very obliquely on stalk. Ocular scales separate. Carinae of carapace reduced, median carina absent; anterolateral angles of carapace each with spine, posterolateral angles broadly rounded. Mandibular palp absent; 4 epipods present. Dactylus of raptorial claw with 4 teeth; superior margin of propodus of claw evenly pectinate. Lateral processes of fifth, sixth, and seventh thoracic somites single, process of fifth somite a flattened, anteriorly curved spine; fifth somite also with ventral spine on each side. Carinae of abdomen reduced, submedians absent on anterior 5 somites. Telson lacking supplementary dorsal ornamentation, submedian teeth with movable apices; prelateral lobes absent. Basal prolongation of uropod slender, elongate; inner margin crenulate.

Type-species: *Schmittius peruvianus* new species. Gender: Masculine.

Discussion: The genus *Schmittius* as defined here includes two species from the Eastern Pacific region, *Schmittius politus* (Bigelow, 1891) [NEW COMBINATION] and *S. peruvianus* new species; *S. politus* originally was described in *Squilla* but subsequently was transferred to *Meiosquilla* by me in 1968. A comparison of the species of *Schmittius* with species of *Meiosquilla* and *Squilloides* reveals that *Schmittius* more closely resembles the latter genus than the former. It seems likely that *Schmittius* represents an Indo-West Pacific element in the Eastern Pacific stomatopod fauna. *Schmittius* resembles *Meiosquilla* in several features: the retention of the movable submedian teeth of the telson, the suppression of body carination, the reduction in numbers of epipods and teeth on the raptorial claw, and in the absence of the mandibular palp. It differs from *Meiosquilla* and resembles *Squilloides* in having anterolateral spines on the carapace, in the shape of the lateral processes of the exposed thoracic somites, and in the structure of the basal prolongation of the uropod; most species of *Meiosquilla* have a broader basal prolongation of the uropod armed with spines or slender spinules on its inner margin. Comparative figures of the lateral processes of the exposed thoracic somites and the basal prolongations of the uropod for both species of *Schmittius* and *Squilloides leptosquilla* are shown in Figure 3.

Etymology: It is most appropriate to dedicate a genus of stomatopods from the Eastern Pacific region to Dr. Waldo L. Schmitt, Zoologist Emeritus in Crustacea at the National Museum of Natural History. Dr.

Schmitt's work on the stomatopods of the Eastern Pacific, published in 1940, provided a firm foundation for subsequent work on American stomatopods.

Schmittius peruvianus new species

Figures 2, 3*c*, *f*

Holotype: 1 ♀, TL 60 mm; south of the Banco del Mancora, Perú; 350 meters; trawl; 2 January 1971; E. M. Del Solar; USNM 139514.

Paratype: 1 ♂, TL 33 mm; Banco de Mancora, Perú; 125 meters; trawl; November 1970; E. M. Del Solar; USNM 139515.

Diagnosis: Ocular scales subtruncate. Anterior margin of ophthalmic somite with median spinule. Rostral plate cordiform, slightly longer than broad, apex pointed. Carapace smooth, with spines at anterolateral angles, reflected marginal and lateral carinae present on posterior fourth. Dactylus of raptorial claw with 4 teeth, greatest depth of propodus near midlength; dorsal ridge of carpus of claw undivided, terminating in blunt lobe. Exposed thoracic somites lacking submedian carinae, prominent, unarmed intermediate carinae present on sixth, seventh, and eighth somites. Lateral process of fifth thoracic somite a broad, anteriorly curved lobe, apex sharp; fifth somite with sharp ventral spine below each lateral process. Lateral processes of sixth and seventh thoracic somites rounded. Ventral keel of eighth somite an erect, rounded lobe. Abdominal carinae spined as follows: submedian 6, intermediate 3–6, lateral 2–6, marginal 2–5. Telson with 3 pairs of long, slender marginal teeth, submedians with movable apices, intermediates longer than submedians; marginal carinae of telson extending to base of lateral teeth; denticles spiniform, 4, 11, 1 in holotype, 6–9, 10–11, 1 in smaller paratype; ventral surface of telson with long postanal keel. Uropod slender, proximal segment of exopod longer than distal, with 6–7 movable spines on outer margin, distalmost extending about to midlength of distal segment. Basal prolongation of uropod with small, rounded lobe on outer margin of spine, inner margin of prolongation crenulate, unarmed.

Color: Body covered with scattered light brown chromatophores. Anterior margins and gastric grooves of carapace dark. Posterior margin and intermediate carinae of posterior three thoracic somites dark. All six abdominal somites with dark posterior line; second abdominal somite with dark, rectangular median patch. Telson with large dark spot at posterior end of median carina, pits on dorsal surface dark. Proximal segment of uropodal exopod with broad, dark dorsal stripe, distal margin dark; distal segment dark, with light longitudinal stripe. Uropodal endopod outlined in dark pigment.

Measurements: Female holotype, total length 60 mm; male paratype, total length 33 mm. Other measurements, in mm, of holotype: carapace length 13.3; cornea width 3.3; rostral plate length 2.1, width 1.9; fifth abdominal somite width 12.7; telson length ca. 8.6, width 10.0.

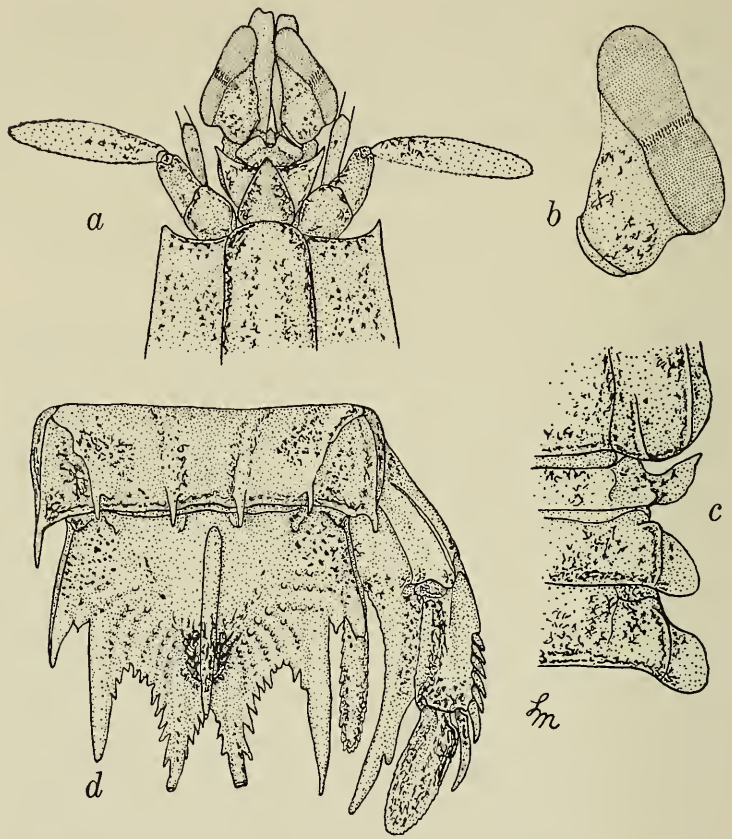

FIG. 2. *Schmittius peruvianus* new genus, new species, female holotype, TL 60 mm: *a*, anterior portion of body; *b*, eye; *c*, lateral processes of fifth, sixth, and seventh thoracic somites; *d*, sixth abdominal somite, telson, and uropod. (Setae omitted.)

Remarks: *Schmittius peruvianus* closely resembles its northern counterpart *S. politus* (Bigelow, 1891), but differs in having a slender eye, a more pointed apex on the rostral plate, the apex of the lateral process of the fifth thoracic somite pointed rather than rounded (Fig. 3*c*), both the lateral and marginal carinae of the second abdominal somite armed, a slenderer uropod, and a much smaller lobe on the basal prolongation of the uropod (Fig. 3*f*). In other respects the two species are very similar.

The male paratype is probably a juvenile; young specimens of squillids often have more submedian denticles than do adults.

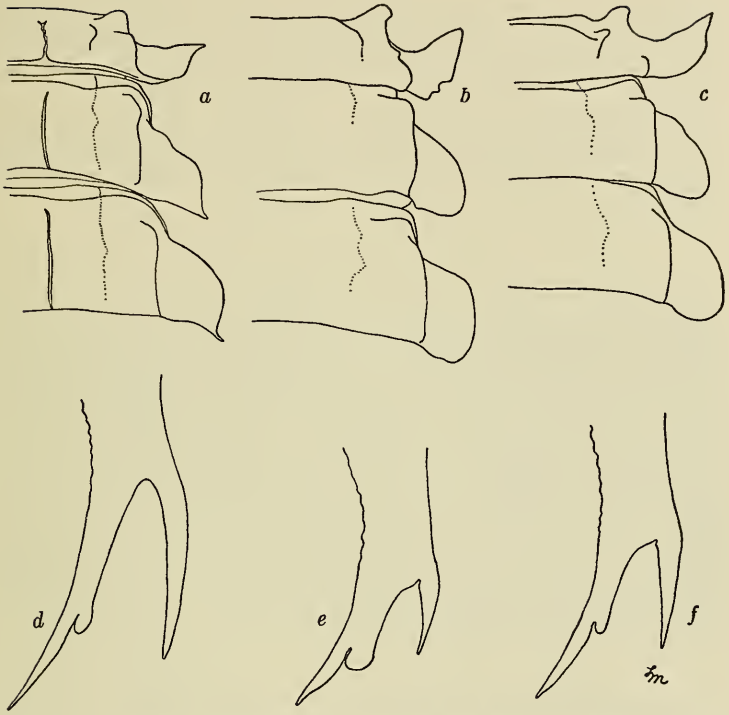

FIG. 3. Lateral processes of fifth, sixth, and seventh thoracic somites and basal prolongation of uropod of: *a*, *d*, *Squilloides leptosquilla* (Brooks), female, TL 66 mm, Taiwan; *b*, *e*, *Schmittius politus* (Bigelow), female, TL 62 mm, California; *c*, *f*, *Schmittius peruvianus* new genus, new species, female holotype, TL 60 mm.

Etymology: The specific name is derived from the geographic area in which the species was discovered.

Squilla hancocki Schmitt, 1940

Squilla hancocki Schmitt, 1940, p. 160, figure 10.—Manning, 1968, p. 129 [listed]; 1972, p. 102.

Material: 1 ♂, TL 61 mm; off Paita, Perú; 220 meters; trawl; 9 May 1969; Enrique M. Del Solar; USNM 139517.

Remarks: This specimen is in very poor condition and lacks the raptorial claws. It agrees very well with the original description of the species, differing only in that there are more submedian denticles, 12–14, rather than 7–10. The dark spots on the carapace and the second and fifth abdominal somites are present. Although it is as large as the holo-

type (TL 60 mm), the dorsal tubercles on the telson of this specimen are very poorly developed. Schmitt (1940) observed that these dorsal tubercles of the telson were poorly developed in the smaller specimens of the type-series.

Distribution: Eastern Pacific region, where it had been recorded from several localities off Mexico and Cape San Francisco, Ecuador, in depths to 73 meters. The present specimen extends the range southward to off Perú.

Discussion

In 1940 W. L. Schmitt recorded 29 species and subspecies of stomatopods from the Eastern Pacific region, of which as noted above, only three species were recorded from Perú. Since 1940, numerous additions have been made both to the Eastern Pacific fauna, which now includes 42 species, as well as to the Peruvian fauna, which now includes 15 species or 36% of the Eastern Pacific fauna. The majority of Peruvian stomatopods are tropical species—10 of the 15 species also occur at least as far north as Panamá. Four of the 15 species also occur in Chilean waters (Dahl, 1954), but only one of these, *Squilla aculeata aculeata* Bigelow, also occurs in the Panamic region. Only two of the species now known from Perú, *Eurysquilla delsolari* Manning and *Schmittius peruvianus*, described above, are endemic.

The Peruvian stomatopods may be distinguished by the following key.

Key to Stomatopod Crustacea from Perú

1. Telson lacking sharp median carina. Propodi of posterior 3 maxillipeds broad, beaded or ribbed ventrally (Family Lysiosquillidae) 2
   Telson with median carina. Propodi of posterior 3 maxillipeds slender, not beaded or ribbed ventrally 4

2(1). Posterior armature of telson lacking movable submedian teeth. Posterior abdominal somites and telson with numerous dorsal spinules. Size moderate or large, adults 80 mm or more in length ..... *Lysiosquilla desaussurei* (Stimpson, 1857).
   Posterior armature of telson with movable submedian teeth. Posterior abdominal somites and telson not spinulose dorsally 3

3(2). Rostal plate longer than broad. Dactylus of raptorial claw with 17–20 teeth. Mandibular palp and 5 epipods present. Size moderate, adults not exceeding 100 mm in length ..... *Heterosquilla* (*Heterosquilla*) *polydactyla* (Von Martens, 1881).
   Rostral plate broader than long. Dactylus of raptorial claw with 11 teeth. Mandibular palp absent, 4 epipods present. Size small, adults not exceeding 35 mm in length ..... *Nannosquilla decemspinosa* (Rathbun, 1910).

4(1). No more than 2 intermediate marginal denticles on telson (Family Gonodactylidae) 5
Four or more intermediate marginal denticles on telson (Family Squillidae) 8

5(4). Anterior 5 abdominal somites with longitudinal carinae. (Dactylus of claw with 3 teeth. Outer spine of basal prolongation of uropod the longest) ..... *Parasquilla* (*Parasquilla*) *similis* Manning, 1970.
Anterior 5 abdominal somites not carinate 6

6(5). Sixth abdominal somite unarmed posteriorly. Dactylus of raptorial claw unarmed ..... *Hemisquilla ensigera ensigera* (Owen, 1832).
Sixth abdominal somite with spines on posterior margin. Dactylus of raptorial claw with teeth 7

7(6). Inner spine of basal prolongation of uropod longer than outer. Dactylus of claw with 7 teeth ..... *Eurysquilla delsolari* Manning, 1970.
Outer spine of basal prolongation of uropod longer than inner. Dactylus of raptorial claw with 3 teeth ..... *Pseudosquillopsis lessonii* (Gúerin, 1830).

8(4). Submedian teeth of telson with movable apices. Median carinae of carapace, if present, lacking anterior bifurcation 9
Submedian teeth of telson with fixed apices. Median carina of carapace with anterior bifurcation. (Dactylus of claw with 6 teeth) 10

9(8). Eyestalks dilated, eyes flask-shaped. No more than 3 epipods present. Dactylus of claw with 5–6 teeth ..... *Cloridopsis dubia* (H. Milne-Edwards, 1837).
Eyestalks not dilated, eyes T-shaped. 4 epipods present. Dactylus of claw with 4 teeth ..... *Schmittius peruvianus* new genus, new species.

10(8). Submedian carinae of anterior 5 abdominal somites unarmed 11
Submedian carinae of fifth and sixth abdominal somites with posterior spines 13

11(10). Basal segment of raptorial claw with ventrally projecting spine. 4 epipods present ..... *Squilla aculeata aculeata* Bigelow, 1893.
Basal segment of raptorial claw unarmed. 5 epipods present 12

12(11). Median carina of carapace lacking anterior bifurcation. Rostral plate lacking median carina ..... *Squilla hancocki* Schmitt, 1940.
Median carina of carapace with anterior bifurcation. Rostral plate with median carina ..... *Squilla mantoidea* Bigelow, 1893.

13(10). Postanal keel of telson produced into spine ..... *Squilla biformis* Bigelow, 1891.
Postanal keel of telson unarmed 14

14(13). Median carina of carapace lacking anterior bifurcation. Submedian carinae of fourth abdominal somite unarmed ..... *Squilla parva* Bigelow, 1891.

Median carina of carapace with anterior bifurcation. Submedian carinae of fourth abdominal somite armed ..... *Squilla panamensis* Bigelow, 1891.

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